

# Aquatic Invasive Species Update

COL Vince Quarles

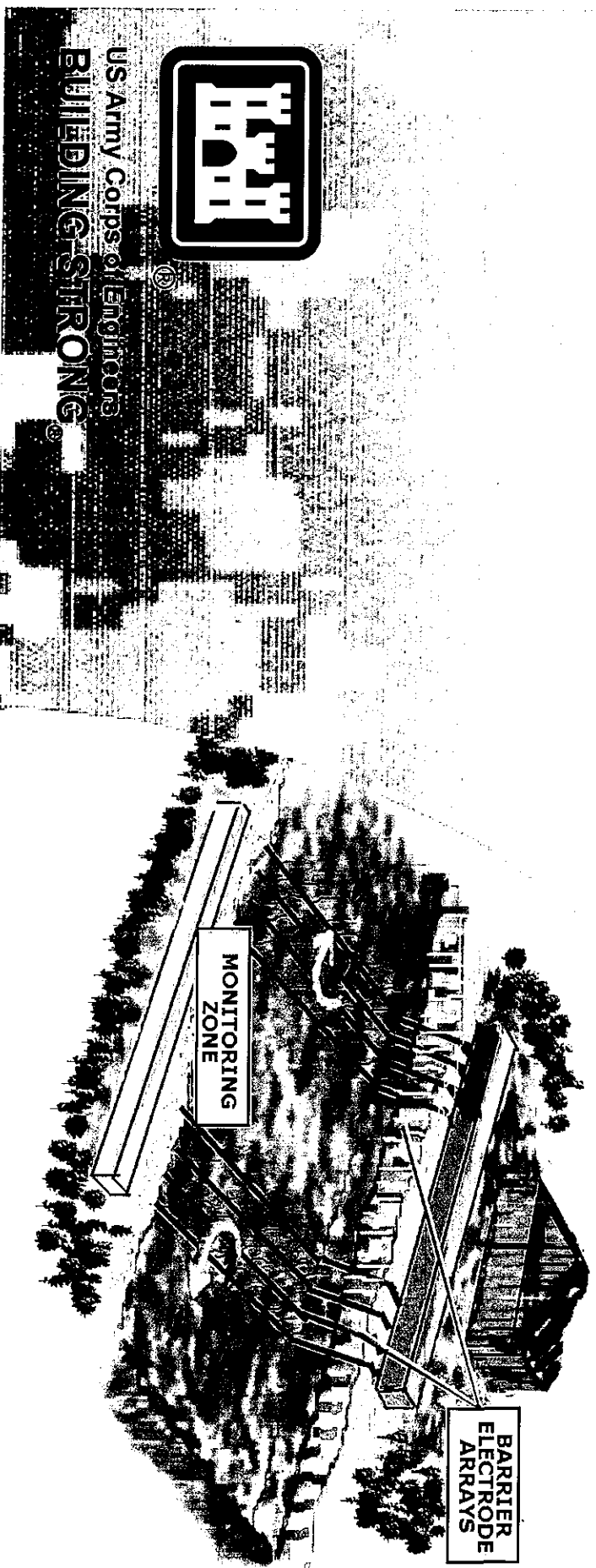
Commander

Chicago District, Great Lakes and Ohio River Division

21 JAN 2010



Silver Carp





# Comprehensive Plan to Address Asian Carp Migration

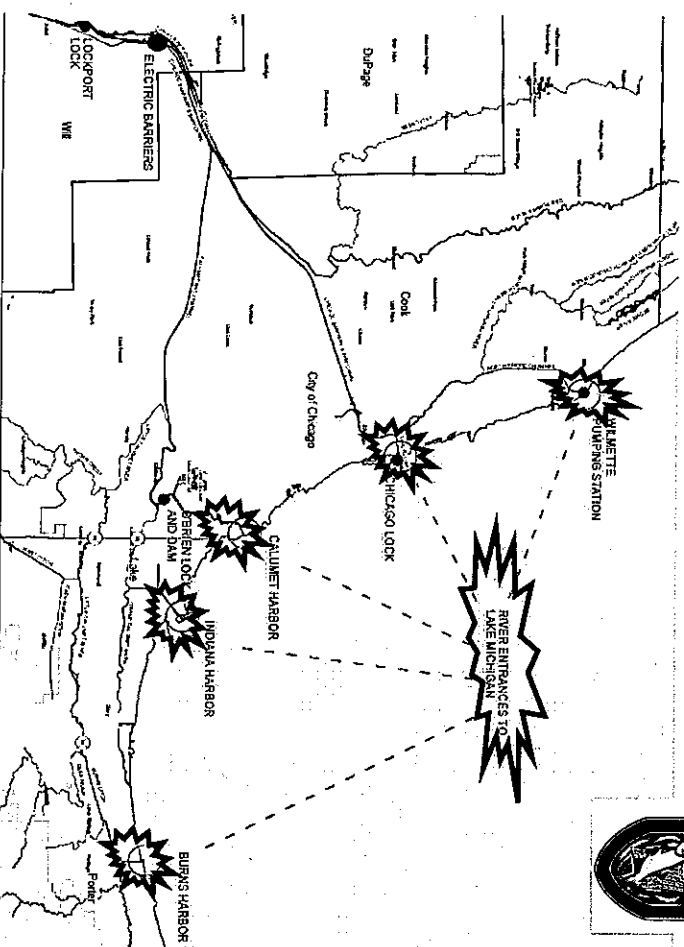
## Short-Term (before warm weather):

- Continue monitoring where winter conditions permits (All)
- Process on hand eDNA samples above Fish Barrier
- Finalize plans to prepare for near term efforts (All)

## Near – Term (thru end of 2010):

- Track leading edge of movement (USACE, FWS, IDNR)
- Prevent migration with barriers and other operational changes - (USACE) & rotenone (IDNR) as needed
- Prevent fish bypass from flanking waterways (Des Plaines/I&M) (USACE)
- Coordinate investigation of risk posed by towboat and barge ballast/bilge water (USCG, FWS)
- Investigate new technologies/controls (DOI)
- Nest State AIS management plans (USFWS)
- Assessing new biological/toxicant controls (USGS)
- Initiating public/stakeholder prevention outreach program (USFWS)
- Funding to support actions including technology development (USEPA)

Multiple Agencies Working Within Full Authorities to Fulfill Common Goal

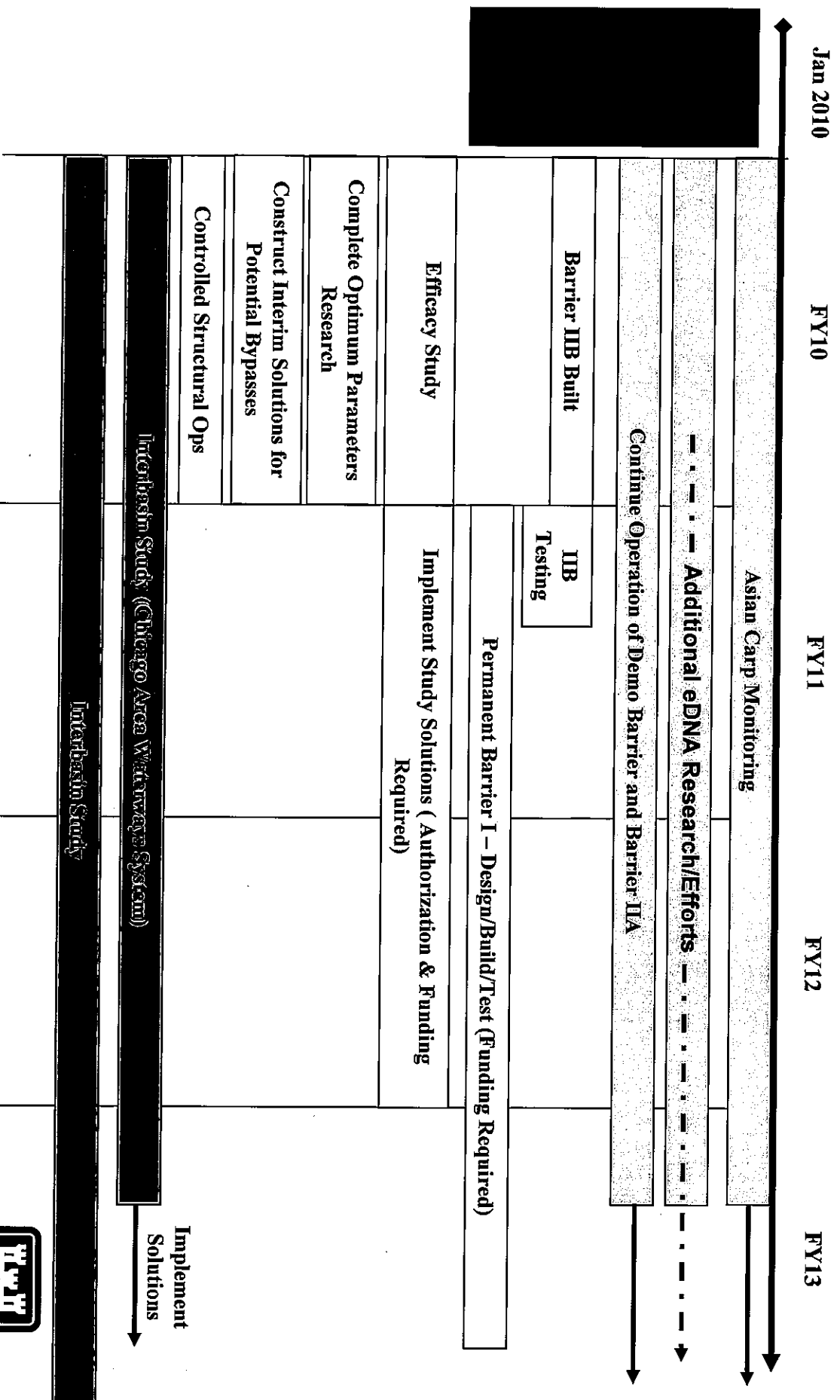


## Long-Term (2011 and beyond):

- Complete Interim Interbasin study/EIS focusing on Chicago-area access points (USACE)
- Complete Final Interbasin study/EIS (USACE)
- Screening additional measures to include secondary fish barriers (All)
- Implement chosen recommendations (All)
- Increase species-specific controls (All)

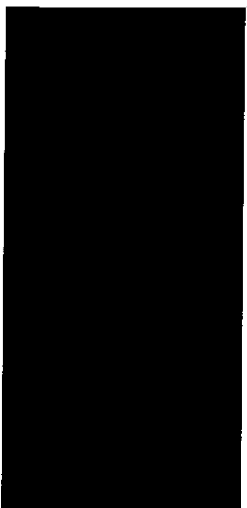


# USACE Strategy for Detering AIS Migration





# Dispersal Barriers Overview

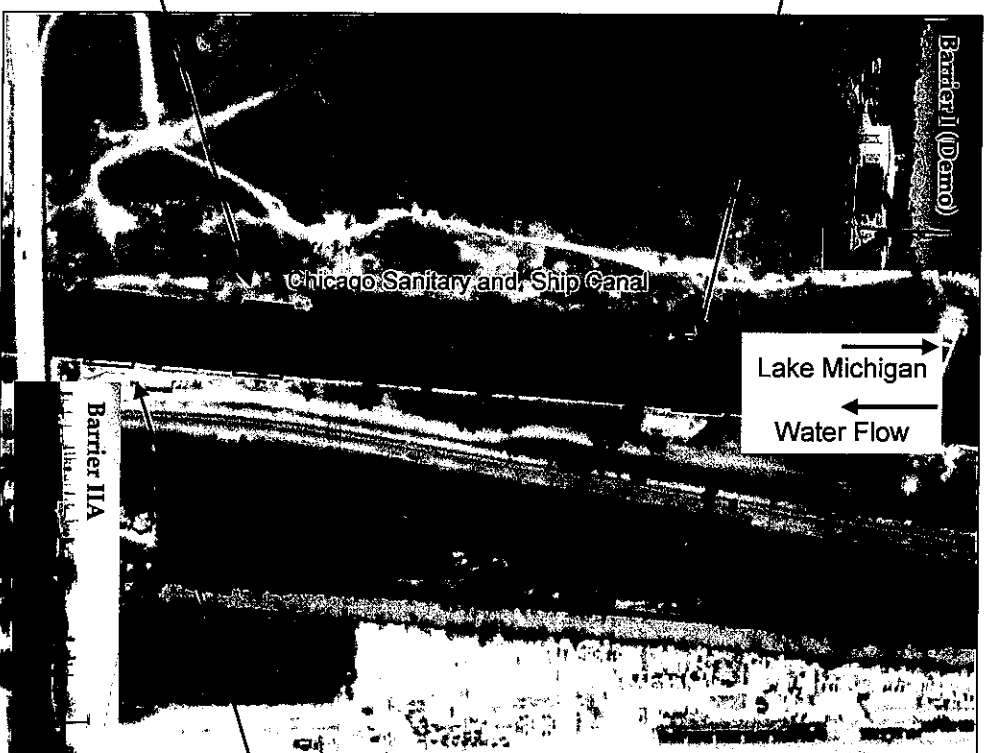


## Barrier I (Permanent):

- Upgrade to a permanent barrier authorized; plan activation by 2013 if funded

## Barrier IIB:

- Site prep completed
- Building construction contract NTP issued 3 Dec
- Electronics design ongoing
- Construction to be completed 30 Sep 10



## Other Ongoing Efforts:

- Support Asian Carp Monitoring
- Research on Optimum Operating Parameters
- Implementing Solutions to Potential Barrier Bypasses

## Barrier IIA:

- Activated @ 1 Volt/in, 5 hz, 4 ms in APR 09.
- Increased to 2 Volt/in, 15 hz, 6.5 ms in AUG 09
- Maintenance shutdown completed 3 - 4 Dec
- w/rottenore support by State





# Optimum Barrier Operating Voltage-Overview

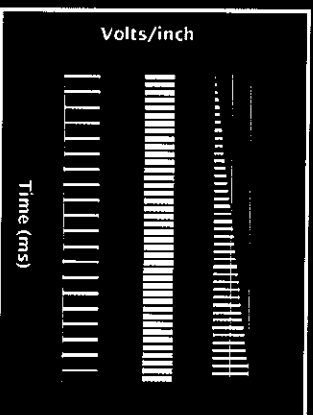
## Effectiveness of the Barriers is Influenced by

## Technical Factors

## Field strength

## Pulse-length

## Frequency



# Effectiveness of the Barriers is Influenced by Biological Factors

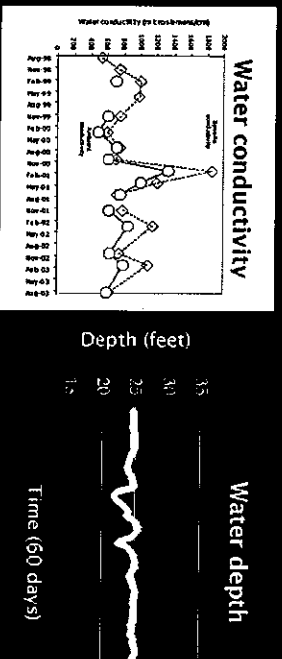
## Species

## Fish size



## Effectiveness of the Barriers is Influenced by

## Environmental Factors



### **Effectiveness of the Barriers**

- USACE can control technical factors based on equipment settings
- Can not control environmental factors

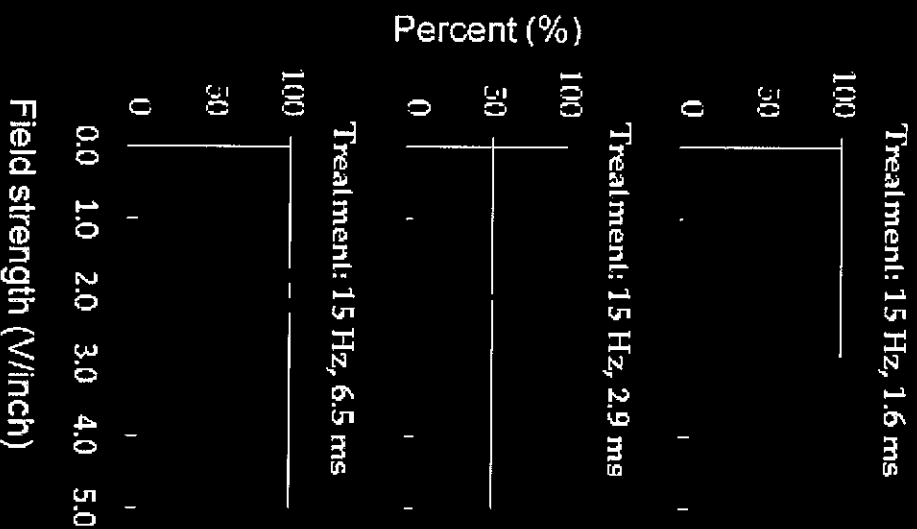
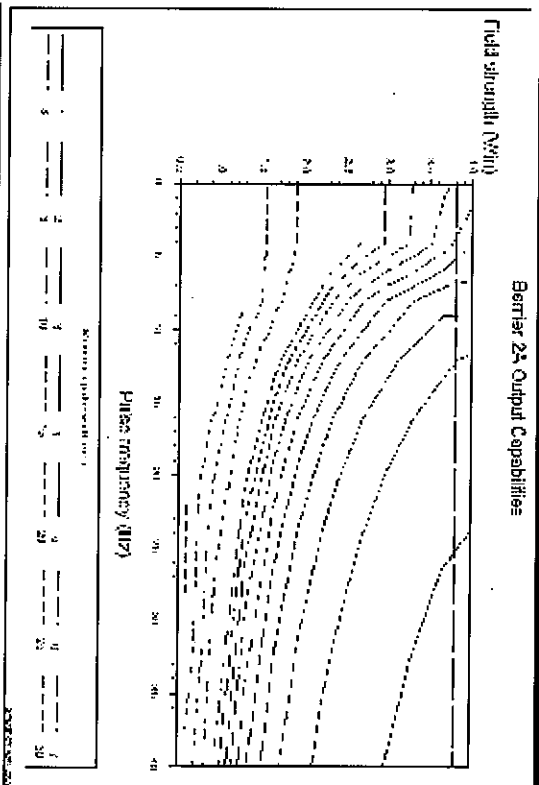




# Optimum Barrier Operating Voltage – ERDC Laboratory Testing



## Outcomes



### Tank Tests

- Three combinations were found that stunned all tested fish
- Voltages less than 4 V/in may be adequate if Pulse Rate is increased
- Flume Tests are planned to validate tank tests - allows fish to turn away before being stunned.



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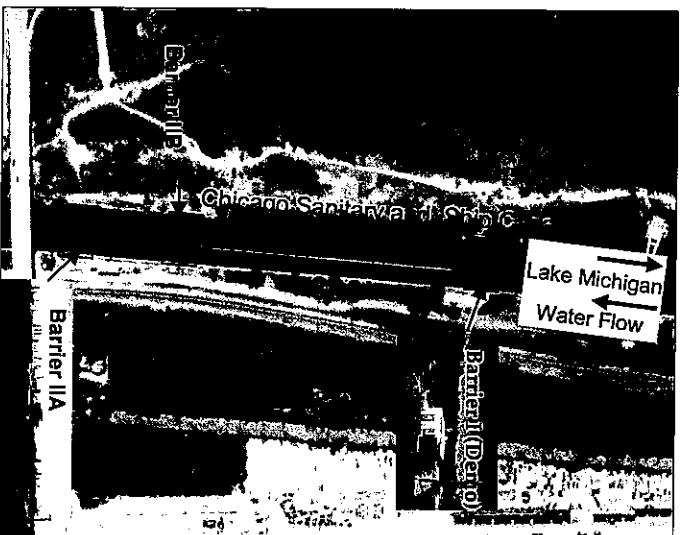
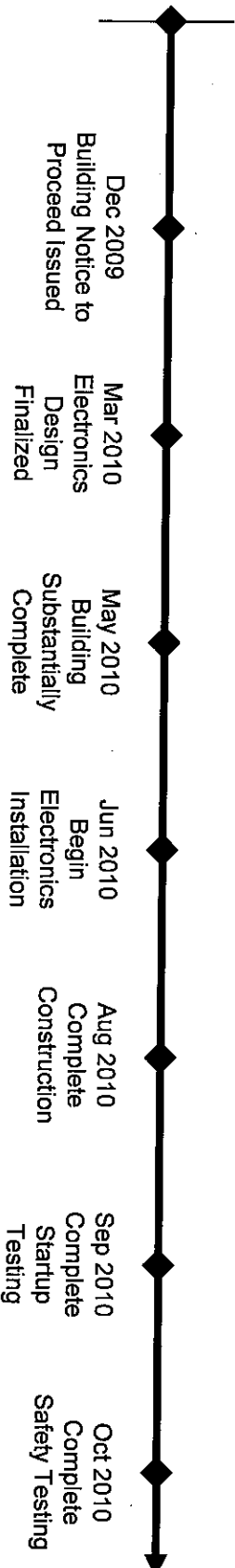


# Construction of Barrier IIB & Permanent Barrier I

30 OCT 2009

Building Construction Contract  
Awarded

## Construction of Barrier IIB



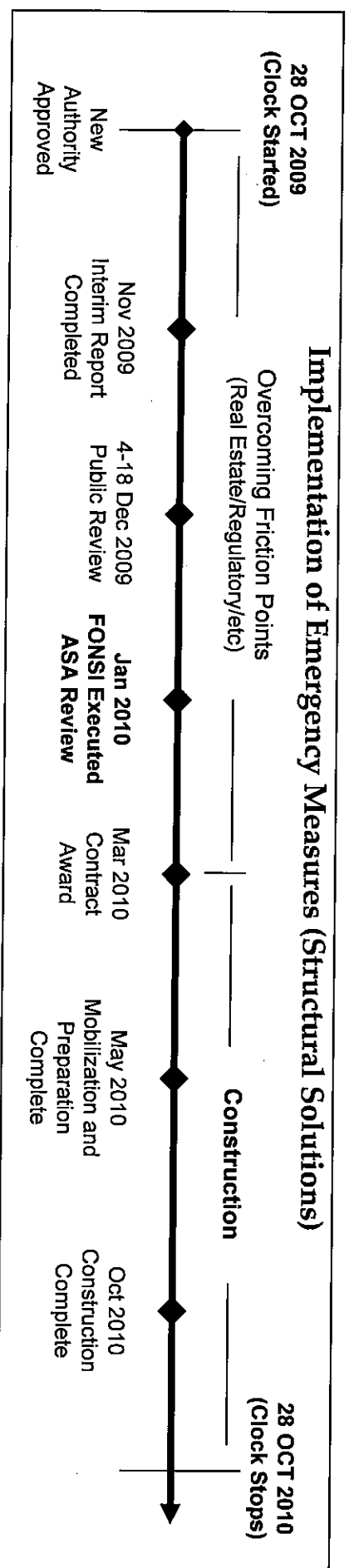
- IIB Capabilities: Range of Operating Parameters Same As IIA
- Improvements for Barrier IIB Vs. Barrier IIA
  - ▶ Closed-Loop Cooling System
  - ▶ All System Components Enclosed in Sealed Building
- Upgrade of Barrier I to Permanent
  - ▶ Similar to IIB
  - ▶ Initiate Once Barrier II is Fully Operational



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# Efficacy Study – Report I



## Recommended Emergency Measures from Interim Report I

**Des Plaines Structural Solutions:** ~13.5 miles of structures (~7 miles of chain-link fence with ¼-inch openings & ~6.5 miles of concrete barriers at 6 different locations)

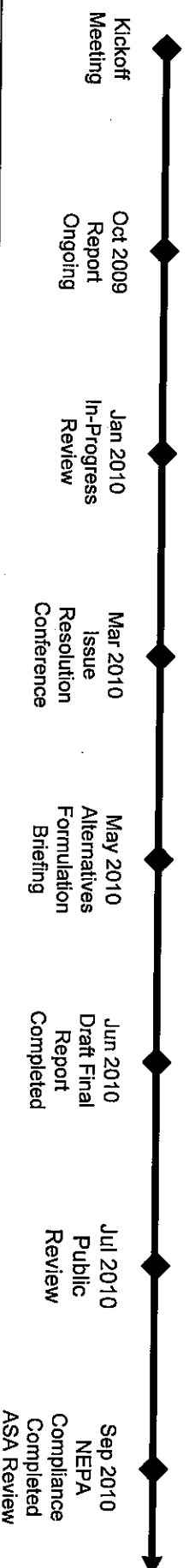
**I&M Canal Structural Solutions:** Block channel at location of natural flow divide





# Efficacy Study – Final Report

## Report Timeline



## Evaluation of Other Potential Emergency Measures to Deter Migration Including:

- Other Electrical Barriers
- Other Types of Behavioral Barriers
- Review of Existing Structures (Operational Changes, Temporary Lock Closures, Dams, etc.)
- Other Assisted Transits (Ballast Water, Bait Buckets, etc.)
- Carp Population Control (Harvesting, etc.)
- Impacts (Flooding, Navigation, Recreation, Water Quality)

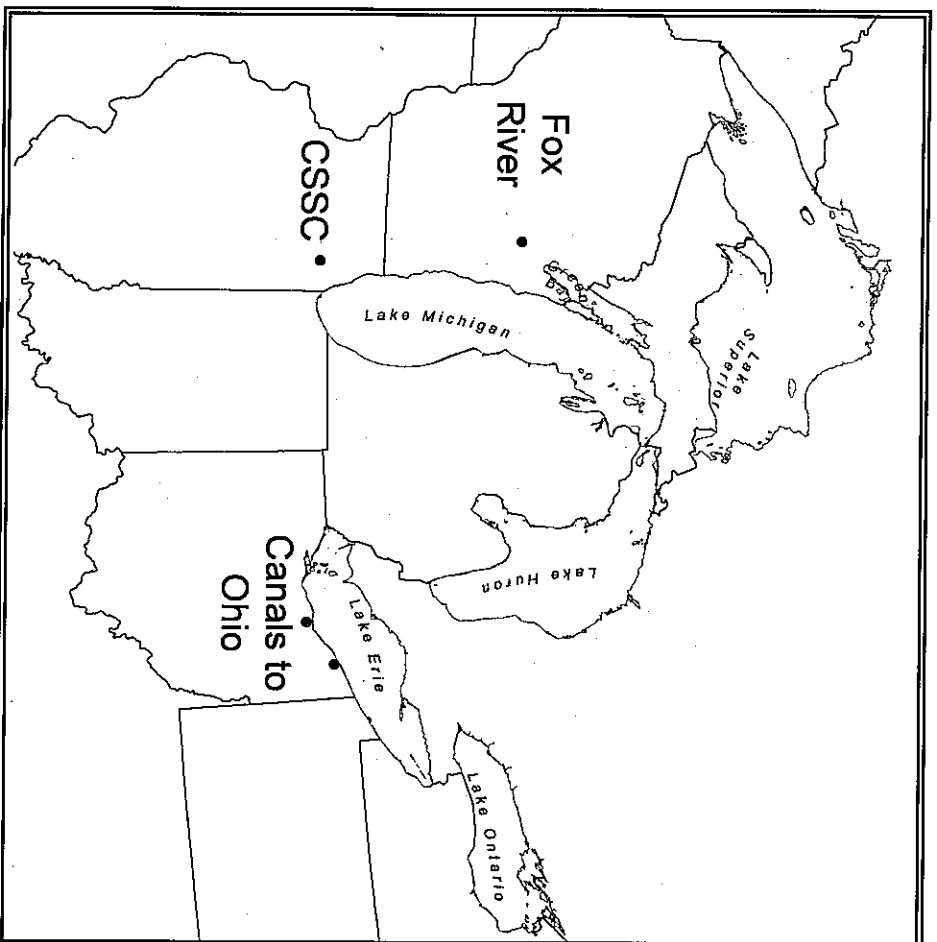
## Implementation Challenges:

- Implementing Authority
- Funding
- Real Estate
- Regulatory
- Other Agency Support





# Long-Term Solutions



## Great Lakes Mississippi River Interbasin

### Feasibility Study/EIS:

- ▶ Authorized in WRDA 2007, Section 3061
- ▶ Feasibility Study/EIS Team Being Formed Now

### ▶ Areas of interest for initial focus area

- CSSC and Connected Waters (IL & IN)

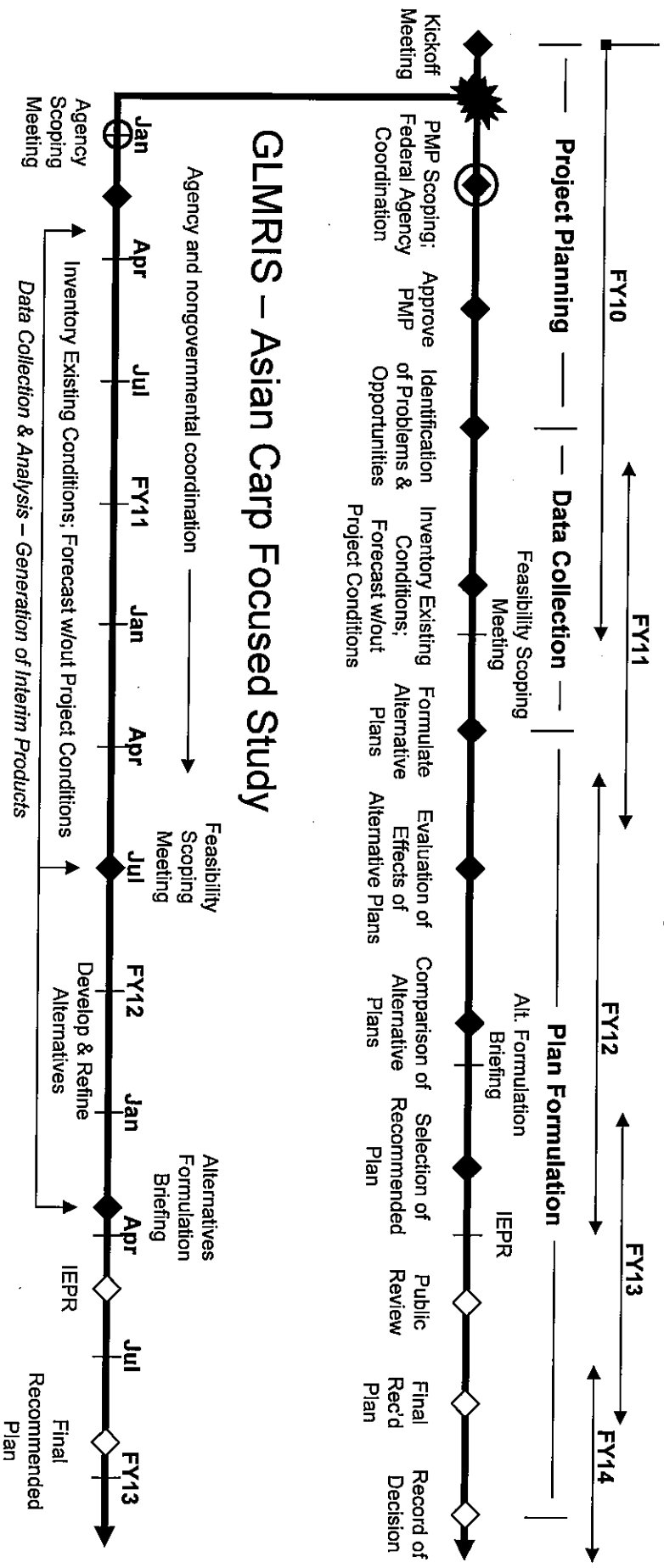
### ▶ Areas of interest for larger study area

- Fox & Wisconsin Rivers @ Portage, Wisconsin
- Ohio River & Lake Erie (2 locations)
- Other pathways





# Great Lakes and Mississippi River Interbasin Study – GLMRIS



## GLMRIS – Asian Carp Focused Study

### • Baseline Assessment:

- Fisheries Survey – Value of GL Fisheries
- Environmental Modeling: Water & Air Quality
- Sustainability of Asian carp in GL
- Economic Analyses: Flood & Navigation impacts

### • Partners:

- USEPA, USFWS, USCG, USGS, numerous State and local agencies and NGOs



# Impact Uncertainties

## Flooding:

- Flood Damage Reduction Structures
- TARP Impacts
- Property Loss / Damage (\$B)
- Loss of Life

## Public Health & Safety/EM:

- USCG/DHS/Chicago Fire & Police

## Commerce / Economics:

- Transportation System Upset
- Critical Infrastructure
- Revenue Impacts
- Job Impacts

## Water Quality:

- TARP Impacts

## Recreation / Tourism:

- Navy Pier
- Great Lakes Shoreline
- Great Lakes Fishing

## Great Lakes Ecosystem:

- Asian Carp (AC) Adaptability
- AC Impacts to Shoreline and Tributaries
- AC Impacts to Great Lakes Fisheries (\$B)

